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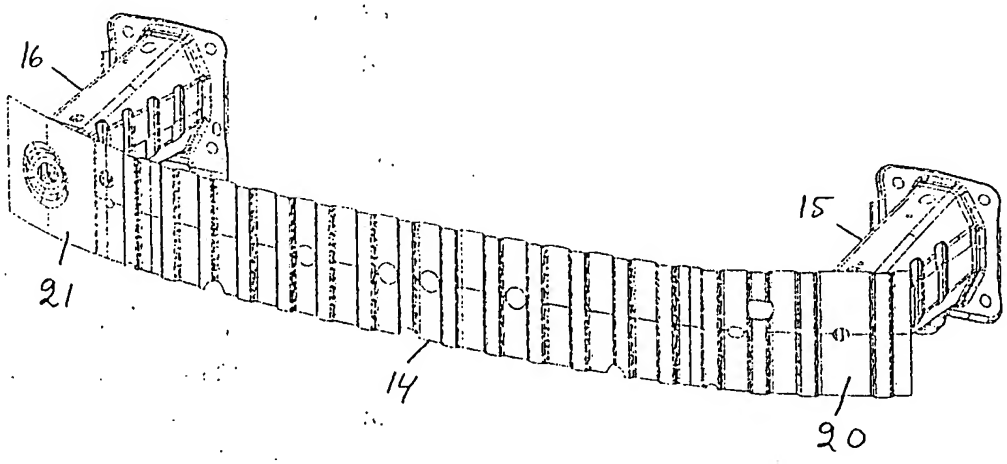
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A BUMPER BEAM FOR A VEHICLE AND A METHOD OF ADAPTING A BUMPER BEAM TO VARIOUS VEHICLE MODELS



(57) Abstract: A bumper beam for a vehicle comprises a hat beam (10) with a cover (14). The hat beam has a crown (11) and side flanges (12, 13), and the cover (14) is fastened to the side flanges. The crown is fastened to the vehicle body. The cover (14) extends past at least one of the side flanges (12, 13) and it is stiffened by being transversely corrugated.

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A bumper beam for a vehicle and a method of adapting a bumper beam to various vehicle models

Technical field

This invention relates to a bumper beam for a vehicle comprising a hat beam with a crown and side flanges, and a cover fastened to the side flanges, wherein the crown is fastened to the vehicle. The invention relates also to a method of adapting a bumper beam to various vehicle models built on the same platform when the ground clearance is not the same for all the models.

Background of the invention

The tests of bumpers are not standardised between USA and Europe and bumpers that cope with all the tests are heavy, big and expensive. In particular, in the pendulum tests, the pendulum does not hit at the same height in the USA test as in the European test. Some car models have therefore not the same bumper when sold in the USA as when sold in the EU. Various car and MPV models built on the same platform will have different ground clearance, that is, the platform will be at various heights. Therefore, various models built on the same platform usually have different bumper beams.

Object of invention and brief description of the invention

It is an object of invention to provide a bumper beam that is light in weight notwithstanding its large vertical extension. It is also an object to provide a bumper beam that can easily be adapted to vehicle models with different ground clearance and a method to adapt the bumper beam to such vehicles. To these ends, the cover of the bumper beam extends past at least one of the side flanges and has transverse stiffening means. The cover may be profiled transversely to provide for the stiffening means. One adapts the bumper beam to the various ground clearance by fastening the cover with different extension past at least one of the side flanges for different vehicle models. The invention is defined by the claims.

Brief description of the drawings

- Figure 1 is a top plan view of a bumper beam shown as an example of the invention.
- Figure 2 is a perspective view of the bumper beam shown in figure 1.
- Figures 3 and 4 are transverse sections taken along lines 3-3 and 4-4 respectively in figure 1.

Description of the illustrated and preferred embodiment of the invention.

The bumper beam shown in the figures comprises a hat beam 10 with a crown 11 and side flanges 12,13. A cover 14 is fastened to side flanges, suitably by being spot-welded thereto. The material in the hat beam and cover is formed sheet steel. Preferably, the material strength should be above 1200 N/mm^2 both in the cover and in the hat beam. The hat beam has its crown facing the vehicle and the crown is fastened to the vehicle body. When the bumper is the front bumper, the bumper beam can be fastened directly to the ends of the side rails of the vehicle platform or to crash boxes 15,16 fastened to the side rails as shown.

The cover 14 extends with a portion 17 past the lower flange 13 as shown in figures 3 and 4. In figure 1, the cover 14 is instead shown vertically centered on the hat beam 11. The cover is transversely profiled, preferably by being trapezoidally shaped, and this profiling makes the cover transversely stiff, that is, vertically stiff. Each individual trapezoidal profile can be considered as a stiffener. The extending flange portion 17 will be strong enough to withstand being hit by the pendulum in the pendulum test. Thus the cover 14 can be wide enough to be hit by the pendulum both in the US pendulum test and the European pendulum test although the hat beam need not be that wide and the bumper will be only marginally heavier than a corresponding bumper that copes with only one of the pendulum tests.

Since the cover 14 is spot-welded to the hat beam 11, its position in height of the cover 14 on the hat beam 11 can easily be adapted to variations in height of the platform above ground for variants of a vehicle model.

With the same hat beam 11 mounted on the side rails of a platform used for a car as well as for a MPV, the same cover 14 can be used both for the car and the MPV. For the car, the cover 14 can then for example be spot-welded to the hat beam 11 and extend above the hat beam whereas it can be spot-welded to extend below the hat beam for the MPV, which has its platform higher above the ground.

When there are big variation in ground clearance between vehicles built on the same platform, it might be necessary to use different covers 14, but such

In figures 1 and 2 is shown that the cover has portions 20,21 that are not corrugated. The portion 21 has a big hole through which a hook for towing may extend, which is fastened to the bottom of the hat beam. The cover 14 may have its transverse corrugation over its entire length.

Claims

1. A bumper beam for a vehicle comprising a hat beam (10) with a crown (11) and side flanges (12,13), and a cover (14) fastened to the side flanges, wherein the crown faces the vehicle and is fastened to the vehicle, **characterised in that** the cover (14) extends past at least one of the side flanges (12,13) and has transverse stiffening means.

2. A bumper beam according to claim 1, **characterised in** that the transverse stiffening means comprise transverse corrugation of the cover (14).

3. A method of adapting a bumper beam to various vehicle models built on the same platform when the ground clearance is not the same for all the models,
4. **characterised in** that a hat beam is used which is mounted to the platform with its crown and a cover wider than the hat beam is fastened to the side flanges of the hat beam and in that one adaptes the bumper beam to the various ground clearances of the various vehicle models by fastening the cover with different extension past at least one of the flanges for different models.

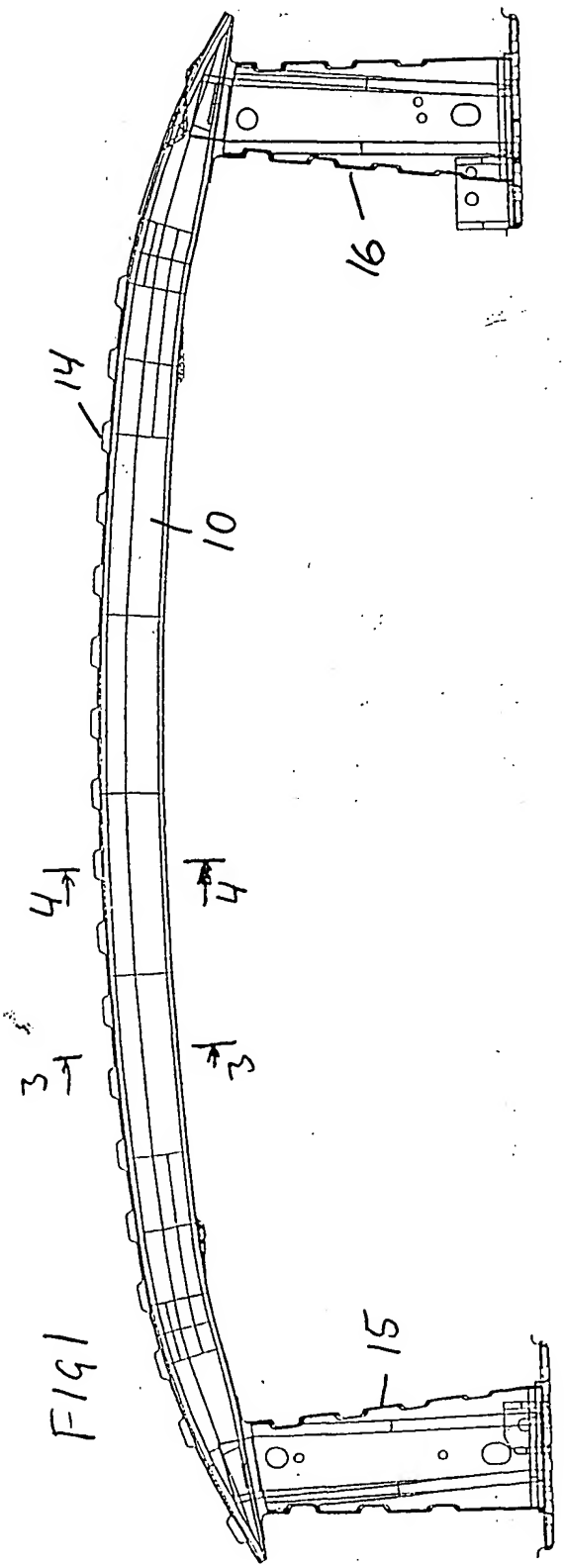

Fig 1

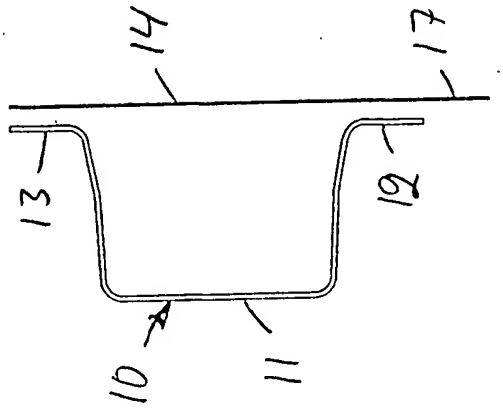

Fig 4

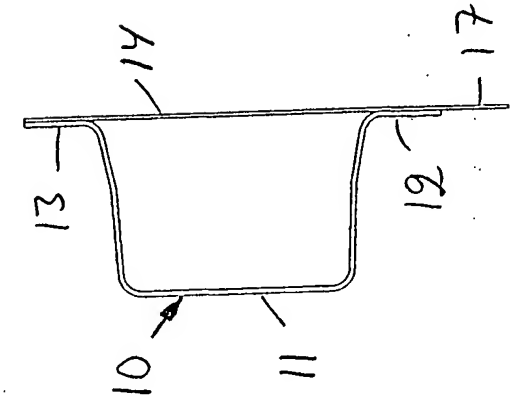

Fig 3

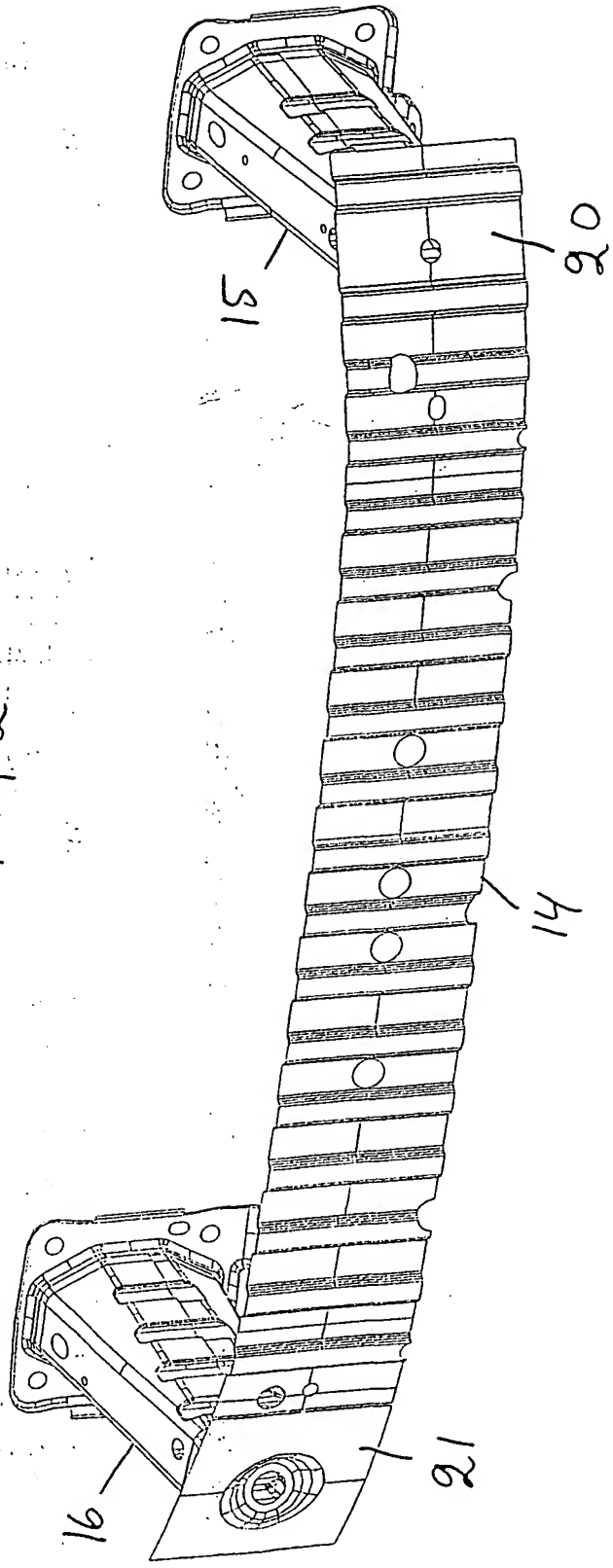

FIG 2

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B60R 19/02
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	--	3
Y	US 4088357 A (KLIE ET AL), 9 May 1978 (09.05.78), column 4, line 20 - line 37, figure 2	1,2
A	--	3
A	US 4765665 A (AKAHOSHI), 23 August 1988 (23.08.88)	1-3
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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Information on patent family members

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